Pacific Health Bulletin

Navy Environmental & Preventive Medicine Unit No. Six Edition **August 1994**

SECNAV NOTICE 5300 (12 May 94) Mandates HIV/AIDS Education

Over the past few months, SECNAVNOTE 5300 has generated many questions. It mandates that all DON commands conduct a minimum of 1 hour of HIV/AIDS prevention education for all military and federal civilian employees by **01 DEC 94**. It provides several options for filling this training requirement.

Training Options

The first recommended option is "A facilitated lecture/discussion conducted by a currently certified HIV/AIDS Instructor or Command volunteers who have attended BUMED sponsored 4-day Instructor Training Course." This option is highly recommended by us at NEPMU-6 since it would provide quality training. This option has generated the most frequently asked question from our customers: "How can our command get this training?" Instructors for this HIV/AIDS General Military Training (GMT) are available in your area. Contact your Area Coordinators for assistance. The list at the bottom of page 3 identifies Area Coordinators.

Other training options include use of BUMED authorized interactive or linear video presentations and/or interactive video disc hardware and associated software. Although these will fill the training requirement, they are not as highly recommended because the competency of the trainer is not specified/insured. Check with your TYCOM or HIV/AIDS Education Area Coordinator for the specific training requirements of your command.

Training Documentation

For military personnel, initial HIV education will be documented as a PAGE 13 Service Record entry. Documentation for civilian personnel should be completed through appropriate Human Resource Office procedures (e.g. DD FORM 1556.)

Instructor Training Opportunities

If you are interested in becoming a NAVY HIV/AIDS educator, please contact your HIV/AIDS Education Area Coordinator for dates, times and quota request information for the instructor training classes. Remember, personnel who are interested and motivated to become HIV/AIDS educators are encouraged to **volunteer**. Commands should not assign personnel to become instructors unless those personnel are qualified and adequately motivated.

NEPMU6 has teamed up with NAVMEDCLINIC Pearl Harbor to provide the BUMED sponsored 4-day HIV/AIDS Instructor Training Course. The following are Pearl Harbor course locations and dates for FY 95 (all classes are from 0730-1630):

LOCATION	DATES
BMC PH	03-06 OCT 94
NEPMU6	11-14 OCT 94
NEPMU6	07-10 NOV 94
NEPMU6	12-15 DEC 94
NEPMU6	09-12 JAN 95
NEPMU6	13-16 MAR 95
NEPMU6	01-04 MAY 95
NEPMU6	24-27 JUL 95
NEPMU6	11-14 SEP 95

BUMED WASHINGTON DC//24// msg DTG 160025Z JUN 94 urges commanders, commanding officers and officers in charge "...to support staff members at their commands who are involved in HIV education and provide them time, where possible to assist this program..." This is

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Korean Hemorrhagic Fever

Korean Hemorrhagic Fever (KHF) can be a threat to U.S. deployed forces in WestPac. This article is written to help Medical Officers and Corpsman understand where and how KHF occurs. Knowing a few simple points can help you prevent it and/or recognize it before it's too late. KHF is not directly transmitted from person-to-person. There is no risk on typical port visits, but it can be a SIGNIFICANT threat in field operations.

KHF, also known as Hemorrhagic Fever with Renal Syndrome (HFRS), is caused by the Hantaan virus. The virus is carried by rodents, which continuously shed it into the soil through urine and feces. Man is infected by inhaling dust contaminated with rodent excreta. In WestPac the ground burrowing Apodemus species of field mouse is usually the culprit.

Cases occur in U.S. forces almost every year. In 1986, 14 USMC cases occurred

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during a field training exercise in South Korea, including two fatalities. In 1989, two cases were diagnosed in Marines training near Pohang along the SE coast. Up to 150 cases per year occur in Republic of Korea Army personnel and many more in Korean farmers.

KHF occurs year-round in North and South Korea, China, and eastern Europe. In China and Korea there are seasonal peaks, one i May-June and the other in October-November. There is also a milder but sometimes fatal form (nephropathia epidemica) that occurs in Scandinavia, eastern and southern Europe.

Incubation period is usually 12-16 days, varying from 5-42 days. Symptoms include abrupt onset of fever lasting 3-8 days, blood shot eyes, prostration, backache, headache, abdominal pain, anorexia and vomiting. (Sounds similar to many other illnesses, doesn't it?). Hemorrhagic manifestations may (or may not) appear on the third to the sixth day ranging from mild petechiae (small dot-sized hemorrhages) on skin and mucous membranes to severe hemorrhage from mucosal surfaces, severe proteinuria, hypotension and sometimes shock. Renal abnormalities may be mild, or progress to acute renal failure and continue for several weeks.

Diagnosis & Treatment of KHF

KHF should be suspected in all febrile patients with possible exposure (anyone who has had contact with soil or dust). It is easily misdiagnosed as leptospirosis or scrub typhus, which occur in the same geographical region. Pay attention to nonspecific flu-like syndromes in any patient. KHF progresses to shock, renal failure, hemorrhage and death. In some cases, proteinuria is an early sign, along with facial flushing and fever. A urine dipstick needs to be done on all patients with unexplained fever. Patients with a 1+ or greater proteinuria should be evacuated to the nearest hospital early in suspected course (better to be safe than sorry). Bleeding occurs easily in these patients, so transport the patient in the least traumatic way possible.

Even if the blood pressure is low, aggressive fluid replacement is contraindicated because of renal failure and massive leaking of fluids into the body spaces. Fluids leaking into the lungs will cause respiratory distress. While awaiting medevac, carefully monitor blood pressure and place in Trendelenburg for shock. Even with treatment, KHF has a 5%-10% fatality rate.

Preventive Measures

A command program of preventive measures is mandatory for all field operations anywhere in the Korean peninsula or in rural China.

1. Educate all personnel on KHF risk.

2. Avoid rodent-infested areas. If significant rodent burrows are seen, the area should not be used as a camp.

3. Rodent control measures should be undertaken during encampment, including proper handling of garbage and food.

4. Personnel should NEVER sleep on bare ground. Epidemiological studies indicate this is a risk factor for KHF infection, due to dust inhalation.

5. Do not use mud or vegetation for camouflage, as this increases chances of inhalation.

6. Dust masks (or military scarves) should be used whenever dusty conditions are encountered. Personnel should not inhale dust!

7. Dust control measures (wet sweeping, wetting roads, etc) should be used to the fullest extent possible.

Understanding where KHF exists and following the preventive measures in this article can greatly reduce the risk of your personnel acquiring it. Clinical recognition, proper initial treatment and transport can reduce fatalities. For information contact the NEPMU-6 Epidemiology Department.

CDR R. Hanson, MC,(FS), USN, Epidemiologist
HM2 K. Tobin, Epidemiology Dept.

This article was reprinted from Pacific Health Bulletin NEPMU6 Edition December 1992

CDR Hanson is currently assigned to the 1st MEF, Camp Pendleton, CA

HM2 Tobin is currently assigned to the Industrial Hygiene Department

From the S. E. A.

Be bullish on education — take advantage of every course offered in your area, and lobby for TAD funds to attend others. But if getting places is difficult, if money is tight, op tempo too confining, there are still options...

California State University at Sacramento offers a series of operator training programs in water treatment subjects including: operation of wastewater treatment plants, water treatment plant operation, treatment of metal wastestream, water distribution systems, and others.

The CSU courses are very inexpensive and user friendly training programs which are self-study, leading to certificates/CEUs or lower-division college credits. While these courses focus on municipal/industrial purposes, you'll be able to apply many lessons to your current responsibilities, and certainly prepare for a post-military career. For more information, contact:

Office of Water Programs
Cal State U, Sacramento
6000 J Street
Sacramento, CA 95819-6025
(916)278-6142

As you may have realized by now, my 'corner' will always focus on education. If you've found an interesting course, degree program, or other educational opportunity, drop me a line and I'll share it with the Fleet.

HMCS B. Supalla, USN, Senior Enlisted Advisor

Prospective Authors:

Have any suggestions? Interested in contributing to the PHB? Send your articles in now! See page 8 for more information.

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important if all personnel are to receive training by the target date of **01 Dec 94**.

Additional information about NEPMU-6's HIV/AIDS Instructor Course can be found in NAVENPVNTMEDU SIX PEARL HARBOR HI msg DTG 291700Z JUL 94 or by contacting the NEPMU-6 Training Department.

Other Information

SECNAV NOTICE 5300 (12 May 94) also provides the following points of contact for information regarding the HIV/AIDS education program:

BUMED HIV Education Office (MED-245)
Phone (COMM/DSN): (301) 295-0048/295-0048
Fax (COMM/DSN): (301) 295-5021/295-5021

PLAD: BUMED WASHINGTON DC//245//

Chief of Naval Education and Training
Phone (COMM/DSN): (904) 452-4027/922-4027
Fax (COMM/DSN): (904) 452-4781/922-4781

PLAD: CNET PENSACOLA FL

Headquarters Marine Corps (MHH)
Phone (COMM/DSN): (703) 696-1174/226-1174
Fax (COMM/DSN): (703) 696-1186/226-1186

PLAD: CMC WASHINGTON DC//MHH//

Commander, Naval Reserve Force (CNRF-009)
Phone (COMM/DSN): (504) 948-5422/363-5422
Fax (COMM/DSN): (504) 948-1340/363-1340

PLAD: COMNAVRESFOR NEW ORLEANS LA

As always, please feel free to contact our Training Department for any of your training questions or needs. See page 8 for our address and phone numbers.

M. J. Shim, M.A., Head, Training Department

BUMEDINST 6280.1A

Management of Infectious Waste

The new version of BUMED's instruction on management of infectious waste was recently issued and this document should now be used for guidance. The major emphasis of this completely revised instruction is on compliance with the OSHA Occupational Exposure to Bloodborne Pathogens, 29 CFR 1910.1030. If you are responsible for this program, the instruction will help you rewrite your local instruction to be in compliance with Federal and local requirements. The significant changes are summarized herein.

The description of "Noninfectious Waste" is relocated to paragraph 2 of the enclosure (before the "Infectious Waste" paragraph.) This new location makes the comparison of the two types of waste much easier.

The definition of liquid or semi-liquid blood or other potentially infectious body fluids has been expanded to comply with the OSHA Bloodborne Pathogen Standard. This definition specifies: "Other potentially infectious body fluids are defined in reference (a) as semen, vaginal secretions, cerebrospinal fluid, pleural fluid, synovial fluid, pericardial fluid, amniotic fluid, saliva in dental procedures and any body fluid visibly contaminated with blood. Materials that could release blood or other potentially infectious body fluids in a liquid or semi-liquid state if compressed and items caked with dried blood or other potentially infectious body fluids that are capable of releasing these materials during handling are also classified as infectious waste."

The "Segregation" paragraph has been expanded to include labelling of containers and plastic bags with the universal biohazard symbol and the word "BIOHAZARD"; alternatively they should be red in color if used to collect infectious waste.

The "Packaging and Handling" paragraph has been both expanded and clarified. The changes are as follows:

(1) place sharp containers into an appropriately labelled second container (plastic bag or rigid box) before treatment and disposal.

(2) place anatomical pathology waste into appropriately labelled double-wall corrugated boxes or equivalent rigid containers that are double-lined with plastic bags for transport and incineration at an infectious waste incinerator.

(3) decant bulk blood and other potentially infectious liquid wastes into clinical sinks (not handwashing sinks), unless this practice is prohibited by State or local regulations.

(4) if commercially available absorbent materials are mixed with blood and other potentially infectious liquid wastes, the solidified/gelanitized materials will be treated as infectious waste before disposal.

(5) bulk blood and other potentially infectious liquid wastes which can not be safely ecanted (e.g., pleurovacs and hemovacs) or which have not been solidified, must be placed into appropriately labelled rigid containers that are double-lined with plastic bags (also appropriately labelled) for transport and incineration.

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Navy Medical HIV Program Area Coordinators for HIV Education

Location	Point of Contact--Phone (COMM/DSN)
Northwest	
NAVHOSP OAKLAND	LT John Benamon--(510) 633-6643/828-6643
NAS ALAMEDA	LT John Benamon --(510) 633-6643/828-6643
MARE ISLAND	Tina Sherman--(707) 646-0527/253-0527
Southwest	
NAVHOSP SAN DIEGO	HM2 Linda Hoerster--(619) 532-9263/522-9263
NEPMU-5 (HIV Info)	CAPT Elizabeth Ledbetter--(619) 556-9254/526-9254
AM RED CROSS	JoAnn Hoye--(619) 291-2620 x128
NAVHOSP TWENTYNINE PALMS	HM2 Julia Trobaugh--(619) 830-2006/957-2249
PORT HUENEME	HM1 Scott Rennie--(805) 982-2464/551-2464
Pacific	
NAVMEDCLINIC PH	HM2 Sheila Allen--(808) 471-2217/471-2217 (Primary POC for Hawaii/Pearl Harbor Area)
NEPMU-6	Anita Steckel/HM1 Michael Bish/Matthew Shim (808) 471-9505/471-9505
AM RED CROSS	Jerry Dolan--(808) 734-2101
OKINAWA	CDR Richard Thomas--011-81-6117-45-7795/315-645-7795

Advances in the Treatment of Scabies and Pediculosis

At any one time, at least 300 million persons worldwide are infested with the scabies mite, Sarcoptes scabei. In the tropics, cases are frequently complicated by secondary bacterial infections. The number of cases of head lice, body lice, and pubic lice worldwide is unknown but probably also runs into the hundreds of millions.

Although most cases occur in underdeveloped countries, major outbreaks of head lice occur among school children in nations with high standards of living. In the United States the prevalence of head lice during 1970 to 1987 ranged from 10% to 40% in schools where accurate surveys were conducted. These figures are not appreciably different from those reported from the public schools of New York during the years 1909 to 1912. Military personnel are at risk of infestation since they often live under crowded conditions or occasionally in unsanitary environments during military operations which favor the spread of these ectoparasitic infestations.

Products containing the active ingredient lindane have been sold in the U.S. for 35 years under the brand name KwellR, although there are several generic formulations. Many other products have been developed for treatment of lice infestations but were not generally as effective as lindane.

The newest product contains the pyrethroid, permethrin. A shampoo formulation, containing 1% permethrin (NSN 6505-01-256-4972), sold under the brand name NixR has been approved for the treatment of head lice, and a 5% cream formulation of permethrin (NSN 6505-01-321-8812) with the brand name ElimiteR can be used to treat scabies. Both are available through the federal stock system.

Permethrin products have undergone extensive clinical trials and are clearly superior to lindane in effectiveness and safety. Permethrin requires less contact time to kill lice or mites and will kill a higher percentage of unhatched lice eggs. Permethrin shampoo leaves a residue in the hair for at least two weeks at levels which are toxic to lice. A single treatment of permethrin gives higher cure rates of both scabies and pediculosis than lindane. Resistance to lindane has been documented in lice and mites from many areas of the world as a result of the widespread use of lindane over several decades.

Lindane is in the same class as DDT and may accumulate in fatty tissues and the brain after repeated exposures. Serious neurotoxicity has been reported in some children. Such complications, however, are rare considering the millions of applications used over the years. In contrast permethrin is much less toxic, is poorly absorbed through the skin and is rapidly metabolized and excreted. It does not produce CNS toxicity that has been associated with lindane use.

"A single treatment of permethrin gives higher cure rates of both scabies and pediculosis than lindane."

Consumer groups and the National Pediculosis Association (NPA) are petitioning the Food and Drug Administration to remove lindane products from the market. The probability that this will happen is high, thus medical personnel should get in the habit of prescribing permethrin for these infestations.

The NPA can be a valuable resource to medical personnel who must deal with outbreaks of pediculosis in public institutions, especially schools or day-care facilities. The NPA is a nonprofit health agency incorporated in 1983 to build awareness about head lice and to standardize control policies nationwide. They sell a wide variety of educational materials useful to health care providers who encounter children with head lice. Call toll free 1-800-446-4NPA for more information on their catalog of products and quarterly newsletter.

CDR J. H. Trosper, MSC, USN (Ret)

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(6) handle suction canister waste from operating rooms in the same manner described above in paragraphs (3), (4) or (5).

(7) wear protective apparel or equipment described in the OSHA Bloodborne Pathogen Standard.

Under the "Transportation" paragraph, the rigid, leak-proof containers used to transport infectious waste shall also be appropriately labelled.

The "Treatment and Disposal" paragraph has been modified and should be carefully reviewed for new program guidance.

Per the "Manifesting and Record Keeping" paragraph, if infectious waste is transported off site, the receiving facility shall provide written documentation of proper treatment and disposal.

The "Training" paragraph has been modified to comply with the training requirements outlined in the OSHA Bloodborne Pathogen Standard.

A new paragraph, "Safety and Occupational Health", has been added to provide guidance on how to handle personnel with occupational exposure to infectious waste.

Finally, the "Cleanup of Infectious Waste Spills" paragraph has been expanded to include placing leaking or broken containers in an appropriately labelled, larger new container that is double-lined with plastic bags.

A. Watanabe, CIH, Head, NAVOSH Department

Adventures in Thailand:
The FDL's Cobra Gold '94 Experience

The Navy Forward Deployable Laboratory (FDL) was successfully field-tested in Thailand last May, during Exercise Cobra Gold '94 (CG94). The annual Combined and Joint exercise was an ideal venue for the FDL, testing both it's ability to deploy and it's ability to carry-out it's mission. Briefly stated, the mission of the FDL is to rapidly establish a state-of-the art microbiology laboratory capable of providing to the JTF preventive medicine officer information vital in the prevention and/or intervention of disease outbreaks.

The objectives of the FDL in the deployment were to: (1) field test laboratory equipment and test the technical feasibility of a prototype FDL, (2) provide infectious disease diagnostic and epidemiological support to CG94, (3) assess STD risk behaviors in U.S. military members participating in CG94, and (4) provide training to Thai and U.S. medical personnel.

The primary staff of the FDL consisted of CDR (sel) L. May, LT K. Kirschner and HMC F. Eslava. This staff was augmented during the exercise by LT C. LeBron from Navy Medical Research Unit No. 2, Jakarta, LT A. Mott (a Naval Reservist from Hawaii) and a technician from the Armed Forces Research Institute of Medical Sciences, Bangkok.

The laboratory was co-located with the III MEF Marine Collection and Clearing Company in a building on the Thai Army base in Chon Buri. From this location the FDL was able to provide direct support to about half of the estimated 10,000 U.S. military participating in CG94. The work accomplished included: (1) processing over seventy clinical specimens for infectious disease diagnosis, (2) more than 50 liaison visits to U.S. and Thai military medical representatives, (3) two formal presentations to US and Thai military medical personnel, and (4) distribution of 3,500 copies of an STD risk factor survey.

As anticipated, diarrhea was the most common infectious disease during the exercise. Almost all diarrhea sufferers had made unsafe choices (local consumption of salads, ice in drinks, or purchase of food from street vendors) prior to their illness. Stool samples of patients presenting to several U.S. medical facilities participating in the operation showed that *Campylobacter jejuni* was most frequently found to be the causative agent. Using statistical analysis of patient information it was determined that consumption of chicken fried rice significantly increased the risk of infection with Campylobacter.

The FDL in Chon Buri, Thailand
(housed in the recently completed Thai Army Hospital)

The FDL also identified one case of lab-confirmed dengue fever and investigated a small cluster of cases of a dengue-like febrile illness. Although the sera from the later patients were negative for dengue IgM, a U.S. Army preventive medicine team was sent to the focal point of the outbreak to identify and control the mosquito population.

It is anticipated that a summary of the findings of the STD risk factor survey will be published in the next NEPMU 6 issue of the PHB (Dec 94).

We encountered a variety of obstacles while in Thailand and a few before we left Pearl Harbor. It was from these difficulties that we gained much of our experience. During a deployment, as expected, not everything happened according to plan.

Alternative plans must be well thought out. And no matter how many alternative plans are made, you can't think of everything. Sooner or later you will need someone's special assistance, and more than likely someone will need yours. It was this spirit of teamwork and cooperation that allowed the FDL to persevere and complete its mission despite the obstacles. From among the many lessons learned, this was probably the most important lesson during the operation.

There was also a little spare time to view some of the scenic, cultural, and recreational highlights of Thailand. It was a wonderful opportunity to see an exotic country and meet some very nice people. We look forward to the chance to put into action everything we learned when we bring the new, improved, better than ever FDL to Cobra Gold '95, or wherever else we are needed.

CDR(Sel) L. May, MC, USN, Epidemiologist
LT K. Kirschner, MSC, USN, Microbiologist

New Options for Stored Product Pest Detection

A male Indian meal moth emerges from its cocoon, dries its frail newly unfolded wings, and sets off in search of a mate after detecting the alluring scent of a female. After honing in on the

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source of the odor, it alights in anticipation of romantic interlude only to find itself entrapped in the glue of a pheromone trap.

The term pheromone was coined over thirty years ago and is defined as a chemical secreted by an organism which affects other individuals of the same species. Pheromones may be classified by the type of behavior they alter such as mating, alarm, trail-marking, aggregating, etc. The sense of smell in some insects is so sensitive they can detect certain types of pheromones several miles away. Insects live in a world of odors. They use olfactory clues to accomplish a wide variety of complex behaviors, including mating, egg laying, defense, and locating food.

"...pheromones provide a powerful method of drawing insects from their hiding places..."

Pheromones of nearly all species of stored product pests of major importance have been identified and are available commercially. Sex pheromones are produced by females to attract males for mating. They are utilized by moths and beetles which have very little time to mate because they are short-lived and do not feed as adults. An Indian meal moth may live only 3 or 4 days as an adult. Long-lived pantry pests which feed in the adult stage use aggregation pheromones, produced by one or both sexes, which attract other individuals to an area for mating or locating a food source.

Scientists are still working out the subtleties of chemical communication in stored product insects and how this knowledge can be used to control these pests. Pheromones are a powerful method of drawing insects from their hiding places to a trapping device to detect and monitor their presence, population density, and location. They can detect infestations when populations are very low and before they spread to uninfested products. Pheromone traps are more efficient than visible inspection and are less labor intensive since traps sample 24 hours a day. Early detection is the key to control of insect damage and pheromone traps are a cost effective tool to reduce losses from insect infestation.

Food attractants are also used to lure stored product pests to traps. They can attract a wide variety of insects, both sexes as well as larvae and adults. Food attractants are relatively simple and inexpensive. However, they may be ineffective in the presence of competing food sources and attract insects only over very short distances. Sometimes a trap may incorporate both a pheromone and a food attractant.

There are many trap designs available on the commercial market. Recently, the Armed Forces Pest Management Board selected three traps for DoD use in food storage facilities. Because the attractant has a short shelf life, the traps won't be placed in the federal stock system but must be obtained through open purchase.

Billions of dollars are lost to insect infestation each year. Problems in the military supply system have much in common with those found in civilian systems. Some problems in the military are unique because of military requirements such as long-term storage under a wide range of conditions, contingency stockpiling, constantly changing personnel, acquisition requirements, and shipboard food storage. Pheromone traps are currently underutilized to reduce losses due to these pests in the military supply system.

A free copy of a Technical Information Memorandum on stored product pest monitoring methods can be obtained by request from the Defense Pest Management Information Analysis Center (DSN 291-5365, COM 301-427-5365). Information on commercial sources of pheromone traps and recommended designs can be obtained from your area entomologist.

CDR J. H. Trosper, MSC, USN (Ret)

Cold Weather Planning

Do your travel plans include areas known for their cold climate? Whether you are going to the mountains on a ski trip or to Korea it's important to be educated about cold weather. Proper cold weather training means knowing the facts about possible injuries and how to prevent them.

Cold weather injuries can cause serious damage and even death if treatment is delayed. Prevention is the most effective way to maintain your ability to function in cold weather. Recognizing cold weather injuries, providing appropriate first aid or buddy-aid, and transferring affected people to definitive medical care will reduce long-term effects of these injuries.

Chilblains are caused by exposure to above freezing temperatures and high humidity. This non-freezing injury leads to red inflamed skin with severe itching. Treatment for this type of cold injury is to use slow and gentle rewarming and massage of the affected area. Early treatment is very effective and can prevent progression to more serious injury.

Frost bite is the freezing of tissue, a more serious injury than chilblains. Parts of the body most often affected are the fingers, toes, ears, nose, chin and cheeks. Although frost bite is primarily due to lengthy exposure to freezing temperature and poor circulation, a short exposure to high windchill can also cause frost bite. Symptoms include pain and general discomfort around the affected area, then numbness of the exposed area. Other signs include a waxy appearance of the skin, tears over bony areas with decreased bleeding, swelling and blisters. Treatment depends on the extent and degree of the damage to tissue but always includes slow warming, keeping the skin dry and intact. Don't rub the affected area with snow, or anything else as this may cause blisters to rupture.

Hypothermia is a condition that occurs when the "core" or central body temperature has fallen from a normal temperature of 98.6°F to 95°F or lower. The individual no longer has enough energy to sustain normal

body temperature and other essential functions. Hypothermia is very serious and can lead to death.

In preparation for exposure to cold weather, obtaining adequate food, water, and proper clothing should be emphasized. The body needs more calories per day to sustain life in cold weather. Water intake is also vital to staying healthy in cold weather. Dehydration can compromise the body's ability to fight off cold weather injuries and decrease the chances of full recovery. Wearing layered, loose fitting, protective clothing can help maintain a healthy temperature. As a minimum, clothing should consist of two layers, the insulation (inner) and the protective (outer) layer. The head radiates thirty to fifty percent or more of all body heat. This means much heat is lost when your head is not covered. Wearing a warm hat will help maintain proper body temperature. Planning ahead is the key to preventing cold weather injuries. Know the weather forecast to make sure you're prepared for the conditions. Finally, let someone know your plans, where you are going, the route and when you will return.

For detailed Cold Weather Training and an unusual training experience there is a fourteen day course taught in Bridgeport California at 6,500 feet. The first week is didactic, the second week is training in the field at altitudes up to 9,960 feet. The last day is a chilling see-what-you-learned survival day. Students learn, in detail, the prevention and treatment of the injuries in cold weather environment. Five classes, each with 40 quotas, are taught each year and HSETC funds 100 students per year. So bundle up and get your requests into your Department Head to expand your knowledge of cold weather and survival.

HM2 R. Glover, USN, Epidemiology Department

E lawe i ke aʻo a mālama, a e ʻoi mau ka naʻauao.

One who takes their teachings and applies them increases their knowledge.

-ʻŌlelō Noʻeau

CIHL CHAT

FOCUS ON FORMALDEHYDE

Formaldehyde is a gas at room temperature, but is commonly used in the laboratory as a 37% aqueous solution known as formalin. It is used in histology laboratories and morgues as a preservative and in the manufacture of wood, paper products, and fabrics. It is considered to be an irritant and potential cancer hazard. Occupational exposures to formaldehyde are regulated under the OSHA Formaldehyde Standard, 29 CFR 1910.1048. It has an action level of 0.5 parts per million of air (ppm), and a permissible exposure limit (PEL) of 0.75 ppm, as an 8-hour time-weighted average. The short term exposure limit (STEL) is 2 ppm as a 15 minute STEL.

The following is a summary of minimum sampling volumes for the three accepted methods for testing for formaldehyde in the air for our Consolidated Industrial Hygiene Laboratory (CIHL):

			Recommended Minimum Volumes	
Reference	**DL***	**LPM***	**PEL**	**STEL**
NIOSH 3500	0.5	≤ 1.0	60 ℓ	15 ℓ
3M 4E	0.5	0.0614	75 min	
OSHA 52	1.0	≤ 0.2	12 ℓ	3 ℓ

***Notes:**
DL = detection limit in micrograms per sample
LPM = flow rate in liters per minute

NIOSH Method 3500 uses two midget impingers in series containing a 1% aqueous solution of sodium bisulfite. Analysis of impinger liquid is done colorimetrically. The advantage of this method is that it is the most sensitive of the three methods and that the analysis can be done economically. The primary disadvantage is that impinger solutions are messy to work with and more difficult to ship to the laboratory.

3M Method #4E uses the 3M 3721 Formaldehyde Passive Dosimeter. Analysis for this method is also done colorimetrically. The biggest advantage of this method is the ease of sampling. One of the disadvantages is that it cannot be used to determine STEL exposures, since the amount of air collected in 15 minutes is too low for a reliable result to be obtained. Additionally, in our CIHL, we find that field blanks often contain in excess of 1 microgram of non-formaldehyde colorimetric interference, which further raises the detection limit. The manufacturer is aware of this problem, and is working on eliminating it.

OSHA Method 52 uses an XAD-2 sorbent tube coated with 2-(hydroxymethyl) piperidine. Analysis is done using gas chromatography. The biggest advantage of this method is that samples are easy to collect and ship. The coated XAD-2 tubes are available from the following commercial sources:

Catalog no. 2-0231, ORBO-24 tube: Supelco, Inc., Supelco Park, Bellefonte, PA 16823-0048, Phone: (800) 247-6628, (814) 359-3441, FAX: (814) 359-3044.

Catalog no. 226-117: SKC-West, P.O. Box 4133, Fullerton, CA 92534-4133, Phone: (800) 752-1127, (714) 992-2780, FAX: (714) 870-9634. This item is available on GSA Contract GS-24F-1100B, expiring on 31 January 1999 (small business).

If you have any questions regarding the sampling for formaldehyde assays, or would like a copy of the different methods or the SKC GSA Contract, contact our CIHL at DSN 474-4428, Commercial (808) 474-4428, or DSN FAX 474-2071.

R. Ishikawa, PhD, Head, CIHL Department

Welcome Aboard!

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Answers to:

WESTPAC WILLIE'S MEDICAL MYSTERIES

From NEPMU-5s June 1994 PHB

1. (d) 2. (a) 3. (d) 4. (c) 5. (c) 6. (c)
7. (d) 8. (d) 9. (b) 10. (b) 11. (d)

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